

## PATENT SPECIFICATION



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174,891

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## COMPLETE SPECIFICATION.

## Process for Producing Finely Granulated Compounds.

I, ADOLF WELTER, of Krefeld-Rhein-  
hafen, Germany, German citizen, do  
hereby declare the nature of this inven-  
tion and in what manner the same is to  
5 be performed, to be particularly described  
and ascertained in and by the following  
statement:—

A process proposed by me in a previ-  
ous Patent Application No. 136,841 for  
10 the production of soda containing water  
of crystallisation, or of mixtures thereof  
with other substances, consists in steam,  
water, snow, or hydrous solutions of soap,  
Glauber's salt, or water-glass being  
15 sprayed upon commercial pulverized  
calcined soda or mixtures thereof and in  
preventing liquefaction or caking by  
keeping the soda in motion, whilst pre-  
ferably also cooling the same.

20 I have also found that my afore-men-  
tioned process is capable of other appli-  
cations, inasmuch as soda containing  
water of crystallisation or mixtures  
thereof are not the only products that can  
25 be made by it. More specifically, this  
process may be used for providing hygro-  
scopic salts, which are apt to decompose  
when exposed to air, with a protective  
enveloping layer that appreciably  
30 enhances their durability. A particu-  
larly important application of the process  
consists in using it for enveloping oxidis-  
ing and reducing agents, which are  
liable to be affected by the weather or  
35 catalysers, with stabilisers. By this  
means the use of metals in the construc-  
tion of the apparatus required for the  
operations is rendered possible, as the  
absorption of ferric combinations that act  
40 as catalysers is precluded. Another  
advantage offered by the process is that if  
the fine division of particles is maintained  
during the whole process, it is possible to  
use lower temperatures than hitherto in

drying operations, on account of the very 45  
considerable increase of the exposed sur-  
face. The thus extended process is  
particularly useful for imparting dur-  
ability to all so called percombinations  
50 and to sodium hydrosulphite and similar  
reducing agents, and for coating these  
substances with water-glass or the like.  
I have also found that a specially advan-  
tageous manner of carrying out such pro-  
cesses consists in introducing the liquid 55  
in a finely divided form into the upper  
part of a tower, and in mixing fine  
particles of the solid substances with the  
moist vapor thus formed by suction or  
compressed air, or by mechanical contriv- 60  
ances, and by finally directing air of a  
lowered or an increased pressure against  
the falling moistened particles so that the  
substance arrives at the bottom in a dry  
and non-caked condition. 65

To carry out the process in this latter  
form the particular liquid is sprayed in  
the finest possible particles in the upper  
part of a tower of any desired material,  
it being of no consequence how this is 70  
done, or whether the spraying device  
itself is inside or outside of the tower.  
The fine solid particles that are adapted  
for taking up the nebulous spray are then  
pressed or sucked into the upper part of 75  
the tower through lateral holes in the  
same, or these particles are made to form  
a dust cloud by mechanical means, when  
a thorough moistening and an exceedingly  
great surface formation will occur. The 80  
solid moistened particles will now drop  
down in the tower. On their way to the  
bottom they will be thoroughly dried by  
the current of air sucked or pressed  
through the tower, so that they now will 85  
not cake. If the air drawn or pressed  
out of the top of the tower, should still  
contain small floating solid particles,

these can easily be separated by any preferred kinds of filtering devices.

This form of the process permits of very low towers and very brief drying operations being employed. Besides the temperatures used for desiccating may be very low, which is a great advantage in treating bodies which are easily decomposed. This form of the process is also adapted for continuous working and is very economical.

#### EXAMPLE:

Crystalline perborate of sodium is sucked or blown into the upper part of a wooden tower of a height of about 30 feet and about 7 to 9 feet in diameter and water-glass solutions of about 30 to 40° B. are squirted through fine spraying nozzles onto the sodium perborate clouds. For better supervision glass windows are provided in the tower. The air current produced in the tower by suction or pressure soon causes the water to evaporate and the particles of perborate coated with a protecting layer of water-glass drop without caking to the bottom of the tower, or the small quantity of them that are carried away by the desiccating current of air can be separated from it by dust chambers. In this way a perborate of sodium powder is obtained each granule of which is coated with a protective layer, and which will keep for an indefinite period. But if perborate of sodium were mixed with a water-glass solution in the ordinary way, a hydrous crystalline paste would result which, before long, would become stiff. It is exceedingly difficult to dry this crystalline paste well enough to render it capable of being ground, even if it is previously broken into fragments. Iron mills would be required for the grinding operation and hence iron would be absorbed which would act as a catalyst and assist in decomposing the

perborate. In my aforescribed novel process, however, not the slightest amount of oxygen is lost and no iron whatever enters the product.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A process for imparting durability to chemicals that are prone to change when exposed to air, consisting in spraying on to the pulverised chemicals or mixtures in question, substances in a liquid form, that are adapted to prevent the decomposition of the said chemicals or mixtures, and in keeping the latter moving, and preferably also cooling or drying them so as to prevent their liquefaction or caking.

2. A method of carrying out the process claimed in Claim 1, consisting in diffusing the liquid in the upper part of a tower and in introducing, by suction or compressed air, or mechanical means into the vapour thus formed, the pulverized chemical and in directing an air current against the moistened particles dropping in the tower, so that the substance arrives at the bottom in a dry and non-caked state.

3. The improved process as described in connection with the example given in the specification.

Dated this 25th day of November, 1921.

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Agents.

Reference has been directed, in pursuance of Section 7, Sub-section 4, of the Patents and Designs Acts, 1907 and 1919, to Specifications No. 5490 of 1908, No. 26,384 of 1908, and No. 18,330 of 1911.